The PRETORIA CENTRE

of the

Astronomical Society of Southern Africa

www.pretoria-astronomy.co.za

NEWSLETTER FEBRUARY 2011

Next meeting

Venue: The auditorium behind the main building at Christian Brothers College (CBC), Mount Edmund, Pretoria Road, Silverton, Pretoria.

Date and time: Wednesday 23 February at 19h15.

Programme:

- **Beginner's Corner:** "Laser pointer rules and regulations" by Andrie van der Linde.
- **What's Up:** by Danie Barnardo.
- 10 minute break — library will be open.
- **Main talk: "The realm of the nebulae" by Dr Robert Groess** **(Be there!)**
- Socializing over tea/coffee and biscuits.

The chairperson at the meeting will be Tony Viljoen.

Next observing evening: Friday 18 February at the Pretoria Centre Observatory, which is also situated at CBC. Turn left immediately after entering the main gate and follow the road. Arrive from sunset onwards.

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Last month's observing evening - by Michael Poll and Johan Smit

About 15-20 people, and six or eight telescopes were present together with 50% cloud. There were a few visitors, including Colin and Debbie. The clouds drifted across the sky fairly quickly with quite big sky holes, which meant that we could see most things at some time, but any particular object would not be in view for long. Also it meant that that obscured objects elsewhere soon came into view. The sky in between the clouds was surprisingly dark and velvety – the far northern star Capella, which is normally lost low down in the horizon haze, was very bright.

Most of the interest in the sky at this time of year is overhead and to the north, with Orion and Taurus, which includes the Pleiades, prime targets. We looked at Aldebaran and the Hyades while the Pleiades were cloud covered, but when the latter were on view, they were wonderful in a low power field.

Jupiter was heading down in the north west. We could see that the southern equatorial belt was just visible, and the planet had two moons on each side. Also in the north east was the constellation of Aries and we had a look at Gamma Arietis (also known as Mesarthim). The star consists of two equally bright white components, which are easily separated. MP calls them "The Owl's Eyes". Robert Hooke discovered in 1664 that this star was a double.

In Orion, the Orion Nebula (M42) was a popular target, and we also looked at M43 just to the north, but still in the Sword. A striking multiple star in Orion is Sigma Orionis, which is the star whose ionising radiation creates the silhouette that is the Horsehead Nebula. Sigma lies just south of the easternmost star of Orion's Belt (zeta ζ). MP could not spot the companion of Rigel on this evening.

In Canis Major the open cluster M41 was a pretty sight. Further south the False Cross and the Diamond Cross were coming up into view, reminding us that the winter sky is not far away.

Johan reports that, apart from testing telescopes, some observers managed to see his favourite, NGC 2547, the "Heart" cluster in Vela, and showed it some of the visitors. Also during the evening, Johan tested a 4.5 inch reflecting telescope that he had restored. There is a little behind it this telescope – it belonged to the late Louis Barendse, who was busy restoring it when he passed away. When members of the telescope making class helped Marianne sort out Louis' telescope gear, two of these telescopes were found. Johan offered to complete the restoration, and is pleased to report that both of them are now in good working condition.

One of the two has been sold already, and this second one was tested during our practical and is now up for sale. The proceeds of the sale will go to Marianne Barendse and the buyer will get a little piece of history, not only as part of Louis' legacy but because each telescope incorporates a little bit of Johan's own innovations. If anyone is interested in the remaining telescope, they can contact Johan.

After most people left, (the clouds were not promising), Johan and Dewald Wagener stayed behind and spent the rest of the evening just talking about astronomy, telescopes, philosophy and whatever other topics came up. In between talking the clouds thinned out around the moon for a while, producing a very pretty moonbow. Sadly this spectacular sight was missed by the early leavers. Johan and Dewald finally left at 23:30, so that what seemed like a failed evening at the start turned out a very nice relaxing time, and did wonders for wellbeing of the people that attended. Johan was reminded again why he so much loves astronomy as a hobby.

Last month's meeting – by Hein Stoltsz

This was the first meeting of 2011 and was well attended, with 36 members and 7 visitors showing up. After the usual welcome wishes and general announcements regarding procedures for the evening, Johan Smit again reminded everyone about the upcoming "National Karoo Star Party" of 29 April – 2 May 2011 at Kambro Padstal near Britstown and Scopex, the following weekend on 7 May 2011. Johan also invited anyone interested to attend a special presentation to the Scouts in Johannesburg on Friday, 18 February 2011. Afterwards you may get a rare opportunity to view skies through the 26" reflector at the Old Republic Observatory. If you can bring a

telescope to help with viewing for the kids it will be greatly appreciated. Further details can be obtained from Johan at 072 806 2939.

In "Beginner's Corner" Pat Kühn explained the basics of equatorial tracking and its usefulness for both visual observations and astrophotography. Using a number of graphic illustrations he demonstrated the relationship between celestial motion, altitude/azimuth and equatorial tracking, and how, after accurate polar alignment, the latter cancels out star movement in the eye piece by adjusting only one axis of movement (at 15 degrees/hour) and without field rotation. The most popular telescope mounts used for tracking include the German equatorial mount, equatorial fork mount, and fork mount with latitude wedge. Equatorial tracking platforms for Dobsonian telescopes (Poncet Equatorial Platforms) are also available in slightly different designs, which provide useful tracking for up to 30 minutes using a motorised baseboard with two partial conical bases running on bearings. An example of such a platform which Pat built was on display at the meeting and it generated considerable interest during the breaks! At the other end of the scale, a small dedicated equatorial mount (commonly known as a "Barn-door" or "Scotch" mount) that can be constructed using relatively cheap components (and be hand operated or motorised) was also on display. This kind of mount can provide useful tracking even for casual astrophotography.

Percy Jacobs presented "What's Up" in February. With New Moon on the 3rd of February, First Quarter on the 10th , Full Moon on the 18th and Last Quarter on 26th February, the best Dark Sky viewing would be from 1st to 8th , and 20th to 28th of February. Mercury and Venus are both visible early morning in the East. Mars is too close to the sun and not visible this month. Jupiter, Uranus and Neptune set rather early in the evening in the West, but Saturn rises earlier in the evening, and provides plenty of viewing pleasure for most of the night, especially with the gradual return of its rings as the planet's tilt towards Earth increases over the coming years. Some constellation, nebula, bright star and star clusters, as well as galaxy highlights for the month were also noted, especially those on the ASSA Top 100 objects list. A special plea was also made to attendees to register and participate in the Observing Programme of the Pretoria Centre.

The main speaker for the evening was Johan Smit who ventured to compile a list of the "Top 10 astronomical breakthroughs of the 20th Century". At the onset it was clear that defining a "breakthrough" in itself was problematic. First of all, one needs to consider the range of parameters to be included, such as "velocity" (e.g. random velocities of galaxy clusters), "ages", "composition", "distances", "processes"(e.g. mechanism of stellar energy generation) and "objects" (e.g., white dwarf stars, Cepheid variables, quasars and gamma-ray bursts) amongst others. Secondly, it is also important to acknowledge the fact that, although the use of new techniques and bigger and more sensitive instruments might lead to breakthroughs, they themselves do not qualify as breakthroughs.

Johan then gave some examples of "then" and "now" to illustrate what great technological advances had been achieved during the 20th century, e.g. in computing power, the range, sensitivity and size of observing instruments, human and robotic exploration of our solar system, the field of quantum mechanics and even the wealth of research data generated by a ten-fold increase in the number of active professional astronomers worldwide.

Researches at the Department of Physics and Astronomy, University of Sheffield asked the readers of Astronomy & Geophysics and their colleagues to produce lists of significant astronomical and astrophysical breakthroughs and to place these in order of significance. Using slightly different criteria for weighting, two lists were compiled:

Interestingly, there is considerable agreement in the ordering of these breakthroughs. The most important was the discovery of the sources of stellar energy. It is also interesting to note the lowly position of planetary astronomy in both Lists A and B. Despite the dawn of the space age, no characteristic of our Solar System makes the top ten. Exoplanets have a somewhat contentious breakthrough status considering that the discovery of well over a hundred planets orbiting stars other than the Sun simply underlines the fact that we really have little idea where our Solar System came from, or how cosmological processes fit in with general star birth!

Needless to say, the topic generated considerable debate and discussion after the talk

and during the coffee/tea and biscuits at the end of the evening!

List A	List B
1. Expanding Universe 2. The multitude of galaxies 3. Cosmic microwave background 4. Exotics (quasars/AGN) 5. Stellar energy sources and evolution 6. Hertzprung-Russell diagram and stellar diversity 7. Exoplanets 8. Stellar chemical composition 9. Dark matter 10. Galaxy mapping and structure	1. The multitude of galaxies 2. Expanding Universe 3. Stellar energy sources and evolution 4. Hertzprung-Russell diagram and stellar diversity 5. Stellar chemical composition 6. Exotics (quasars/AGN) 7. Cosmic microwave background 8. Dark matter 9. Exoplanets 10. Solar probing using neutrinos/ helioseismology

Summary of "What's Up" to be presented on 23 February - by Danie Barnardo

Phases of the Moon

New Moon 4 March
First Quarter 13 March
Full Moon 19 March
Last Quarter 26 March

Best observing time is in the beginning of the month from 1 to 9 March and again at the end of the month from about 28 to 31 March

Planets

Mercury : (mag -1.4) rises just after sunset and is visible (difficult) until dusk ends
Venus : (mag -3.9) is visible for 2 to 3 hours before sunrise
Mars : Too close to the sun to be visible
Jupiter: Not visible this month but is at perihelion on 17 March
Saturn: (mag 0.6) rises at about 20:30 at the beginning of the month and steadily earlier. It is an all-night object by month end, when it rises just after 18:00
Uranus : Too close to the sun to be visible
Neptune : Visible in the morning sky from the second week of the month, but extremely difficult

Galaxies visible in March

Orion (Ori), Canis Major (CMa), Canis Minor (CMi), Taurus (Tau), Gemini (Gem), Centaurus (Cen), Crux (Cru), Vela (Vel), Carina (Car), Hydra (Hya), Puppis (Pup), Dorado (Dor)

Autumn in the Earth's southern hemisphere starts officially on 21 March.

Some sources of information on what there is to observe are:

- http://www.skyandtelescope.com/observing/ataglance
- http://www.heavens-above.com/
- http://skymaps.com/
- http://spaceweather.com/
- http://spaceweather.co.za/
- http://www.saao.ac.za/public-info/sun-moon-stars/
- http://www2.jpl.nasa.gov/calendar/
- Sky Guide Africa South 2011

(continued on next page)

ASSA Top 100 Objects – a selection of objects visible in March

NGC 1976	Great Orion Nebula, Messier 42, LBN 974		BrtN	2.9	1.1° x 1°	Ori
NGC 2070	Tarantula Nebula, 30 Dor Cluster, [SL63] 633	Ben 35	BrtN		40’	Dor
NGC 2287	Messier 41, C 0644-206		OpCl	4.6	38’	CMa
NGC 2422	Messier 47, C 0734-143		OpCl	4.5	30’	Pup
NGC 2437	Messier 46, C 0739-147		OpCl	6.1	27’	Pup
NGC 2447	Messier 93, C 0742-237, Collinder 160		OpCl	6.2	22’	Pup
NGC 2516	C 0757-607, OCl 776.0		OpCl	3.8	30	Car
NGC 2547	C 0809-491		OpCl	4.7	20’	Vel
NGC 2548	Messier 48, C 0811-056		OpCl	5.8	55’	Hya
IC 2391	Omicron Velorum Cluster, VdB-H 42		OpCl	2.5	50’	Vel
NGC 3132	Eight-Burst Nebula, ESO 316-27, HD 87892, HD 87877, Hen 2-40, PN G272.1+12.3	Ben 43	PInb	8.2	84” x 53”	Vel
NGC 3201	C 1015-461, GCl 15	Ben 44	GIcl	6.8	18’	Vel
NGC 3242	Ghost of Jupiter, Cat's Eye, ESO 568-5, HD 90255, PN G261.0+32.0, SAO 155965	Ben 45	PInb	8.6	16”	Hya
NGC 3372	Eta Carina Nebula, Gum 33, RCW 53		BrtN	5.0	120’	Car
NGC 3532	C 1104-584, VdB-H 109		OpCl	3.0	55’	Car
NGC 3918	Blue Planetary, ESO 170-13, HD 102854, Hen 2-74, PN G294.6+04.7		PInb	8.4	12	Cen
NGC 4594	Sombrero Galaxy, Messier 104, LEDA 42407, UGCA 293	Ben 52	GIxy	8.0	8.7’ x 3.5’	Vir
Coalsack			DrkN	–	6.5° x 5°	Cru
NGC 4755	Herschel's Jewel Box, C 1250-600, Melotte 114, VdB-H 141		OpCl	4.2	10’	Cru
NGC 5128	Centaurus A, ESO 270-9, LEDA 46957, SGC 132233-4245.4	Ben 60	GIxy	7	18’ x 14’	Cen
NGC 5139	Omega Centauri, HD 116790	Ben 61	GIcl	3.7	36’	Cen
NGC 5236	Messier 83, Southern Pinwheel Galaxy, ESO 444-81, LEDA 48082, SGC 133411-2936.8	Ben 63	GIxy	7.5	13’ x 11’	Hya

Errata

The web link given on page 4 of the January 2011 newsletter to information about the solar eclipse of 4 January 2011 was incorrect . It must be:

http://spaceweather.com/eclipses/gallery04jan11.htm?PHPSESSID=dpoc0ifnk3uljo9n902k4bbsi6

Hoogtepunte in ruimteverkenning vanjaar

Februarie: Stardust NExT kom by komeet Tempel 1 aan.

http://stardustnext.jpl.nasa.gov/

Maart: MESSENGER beweeg in 'n baan om Mercurius.

http://www.nasa.gov/mission_pages/messenger/main/index.html

Mei: Die ontdekkingstuig DAWN kom by die asteroïede Vesta aan.

http://dawn.jpl.nasa.gov/

Augustus: Die Juno-ruimtetuig word na Jupiter gelanseer.

http://solarsystem.nasa.gov/missions/profile.cfm?MCode=Juno

September: Die GRAIL-ruimtetuig word na die maan gelanseer.

http://science.nasa.gov/science-news/science-at-nasa/2008/22may_grail/

http://en.wikipedia.org/wiki/Gravity_Recovery_and_Interior_Laboratory

November: Curiosity, 'n mobiele laboratorium, word na Mars gelanseer.

http://www.nasa.gov/mission_pages/msl/index.html

(Aangepas vanaf 'n nuusflits opgestel deur Serena Ingamells van die Orion Observasie Groep.)

Looking for the Sun's siblings using chemical tagging

Despite decades studying galaxy formation, we still have only a crude picture of how galaxies like our own Milky Way came to exist. Much detail on the physical scenario is still missing and understanding it requires the joint effort of observations, theories and complex numerical simulations. The newly developed technique of chemical tagging is an observational tool that may eventually allow the identification of the members of the clusters that formed the original building blocks of the Milky Way. It is a complex, yet fascinating field of study, currently being developed by astronomers from the European Southern Observatory (ESO).

Studies show that all stars within fossil clusters share the same chemistry. This chemical signature acquired at birth is preserved within the stars throughout their lives, except in particular cases such as binary stars, variable stars or very massive stars. Most other stars should retain their original chemical signature despite their travels around the Milky Way. Most open cluster stars will dissolve and disperse into the Milky Way's background, like children in a family growing up and eventually leaving home. Therefore this chemical signature can be used as a tag to identify the origin of a given star in the Milky Way.

The image shows the Pleiades open cluster. It will eventually be dissolved into the Milky Way's background

Just as DNA can be used to trace a family tree, the chemical tagging technique can be used to recover the original family members of our Sun. Although our Sun is now a single star, it was born in a star cluster. Its siblings, who are now located elsewhere in the Milky Way, can be traced by looking for their unique chemical signature. Finding other stars that share the same chemical make-up as the Sun is one of the goals of chemical tagging. The long-term goal of chemical tagging is to reconstruct the ancient building blocks of the Milky Way disc. By recon-

structing these original clusters, it will give insights into the formation and evolutionary processes, such as the rate of star formation, or possible accretion of smaller external galaxies. This will enable the development of a sequence of events of how the Milky Way came to be as it is today. The currently available instruments on ground-based telescopes are able to provide data on the nearby regions of the disc, but are not sufficient to perform large-scale chemical tagging of the entire disc. This field of research will be greatly boosted by European Space Agency's upcoming Gaia mission. Gaia is set to be launched by 2012 and will provide data for about **one billion** stars in the Milky Way. (See below.)

This was adapted from an ESO Publication "Post Cards from the Edge of the Universe" - An Anthology of Frontline Astronomy from Around the World (ESO, 2010). You can read more about this book and even download an electronic version of it at:

http://www.postcardsfromuniverse.org/

(Sent in by Dr Hubrecht Ribbens, one of our members.)

FEATURE OF THE MONTH: The Gaia mission

Gaia will conduct a census of **a billion** stars in our Galaxy, monitoring each of its target stars about 70 times over a five-year period. It will precisely chart their positions, distances, movements, and changes in brightness. It will measure their positions to an accuracy of 0.000024", which is 42 times the best accuracy of the Hipparcos satellite. (See page 10.) It is expected to discover hundreds of thousands of new celestial objects, such as extra-solar planets and failed stars called brown dwarfs. Within our own Solar System, Gaia should also observe hundreds of thousands of asteroids. Its main goal is to clarify the origin and evolution of our Galaxy. Gaia's expected scientific harvest is of almost inconceivable extent and implication.

Below is an artist's representation of the Gaia observatory with the central part of our Galaxy in the background.

http://www.esa.int/esaSC/120377_index_0_m.html#subhead1

For more information, give your Google or other search engine the keywords **gaia mission esa**.

Editor's comment: This is incredibly exciting!

Discovery of a planet outside the Galaxy

A new planet discovered orbiting a bloated red star is the first world we know of that was born in another galaxy. Since the mid-1990s astronomers have been adding to the list of known exoplanets, planets that exist outside our solar system. The over 500 exoplanets found so far all formed in our home galaxy, the Milky Way.

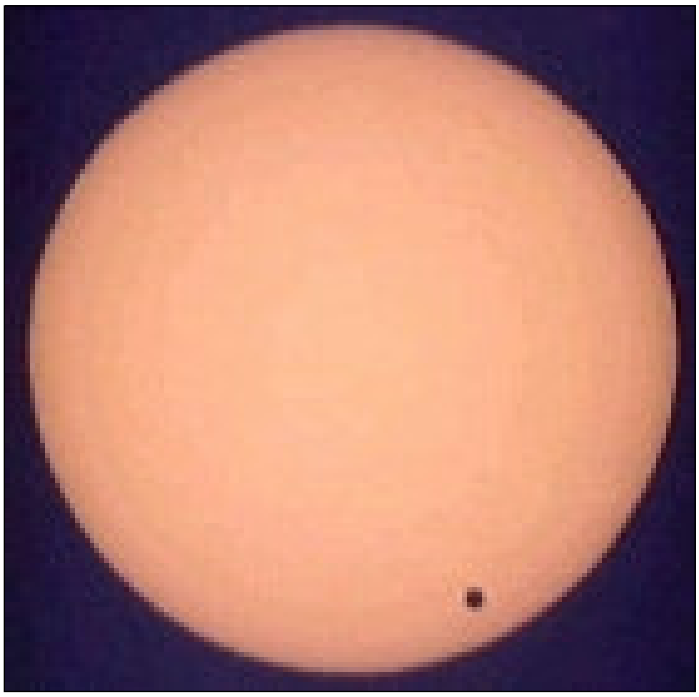
But the newest member of the exoplanet club, dubbed HIP 13044b, was found in a stream of vagrant stars that loop around the Milky Way. Astronomers think this stellar stream is all that remains of a dwarf galaxy that once orbited the Milky Way.

About six billion years ago the Milky Way collided with and mostly absorbed this unnamed galaxy, leaving a trail of stars that now zips around our galaxy at more than 965,600 kilometers an hour.

http://news.nationalgeographic.com/news/2010/11/101118-science-space-new-planet-discovered-outside-galaxy/

From the archives

Images of the transit of the planet Venus across the face of the Sun on 8 June 2004 were recorded by Koos van Zyl and Mauritz Geyser, two former members of the Pretoria Centre of the ASSA. The images were put on the Internet as soon as they were recorded. This was all done from the roof of the building of the Physics Department at the University of Pretoria. Below are two of these images.



Venus transit 08 June 2004 12h 34m 23s SAST (= UT + 2 hours)

Venus transit 08 June 2004 12h 57m 27s SAST (= UT + 2 hours)

Discovery triples number of stars in Universe

Astronomers have discovered that small, dim stars known as red dwarfs are much more prolific than previously thought - so much so that the total number of stars in the universe is likely three times bigger than realized before. Because red dwarfs are relatively small and dim compared to stars like our Sun, astronomers hadn't been able to detect them in galaxies other than our own Milky Way and its nearest neighbours before now. As such, they did not know how much of the total stellar population of the universe is made up of red dwarfs.

In addition to boosting the total number of stars in the Universe, the discovery also increases the number of planets orbiting those stars, which in turn elevates the number of planets that might harbour life. The red dwarfs discovered are typically more than 10 billion years old. They have been around long enough for complex life to evolve on planets around them..

http://www.sciencecentric.com/news/10120217-discovery-triples-number-stars-universe.html

Earth-size planet around red dwarf has hot and steamy atmosphere?

The atmosphere of a "super Earth" has been analyzed for the first time - and it isn't pretty. The exoplanet GJ 1214b was discovered last year orbiting a dim, red star about 40 light-years from Earth. The planet is about 2.7 times larger than Earth and about 6.5 times more massive.

Based on the planet's density, astronomers estimate that GJ 1214b would be about three-quarters water with a solid core and an atmosphere—not unlike Earth. But it seems the similarities stop there. The planet is so close to its star that any water would be turned to vapor, and the atmosphere should be so thick that the pressure would be immense.

Now new measurements show that GJ 1214b's atmosphere is made of either dense, ultra hot steam or a noxious, cloudy haze of hydrogen.

The planet GJ 1214b with its imaginary moon orbits its dim, red host star in this artist's conception.

http://news.nationalgeographic.com/news/2010/12/101201-science-space-first-super-earth-atmosphere-steam-haze/

Artikel oor Nasionale Sterpartytjie van 2010

Suki Lock het ‘n artikel oor die Nasionale Sterpartytjie van 2010 (aangebied deur die Pretoria Centre van die ASSA) vir die Februarie 2011 uitgawe van die Cape Observer geskryf. Die Cape Observer is die nuusbrief van die Cape Centre van die ASSA.

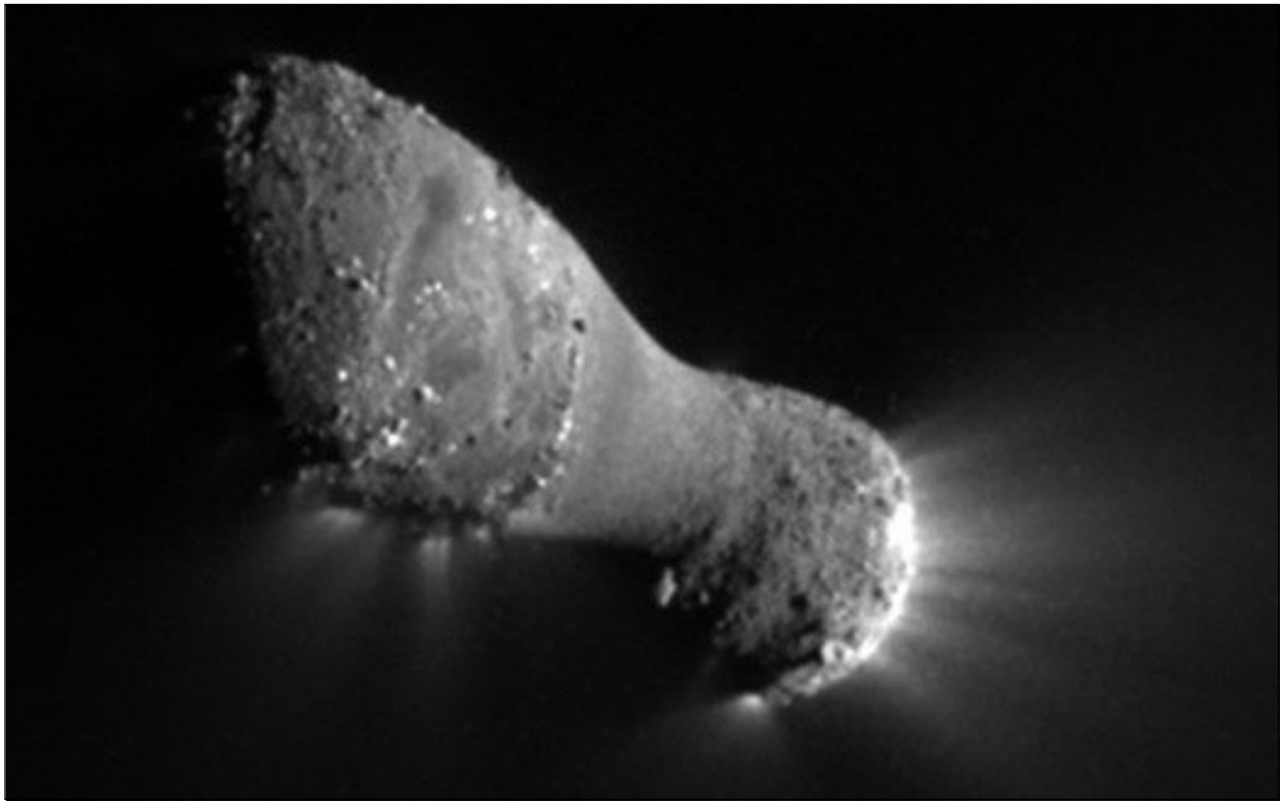
http://www.capecentre.org.za/capeobserver.html

Hierdie webskakel sal ook op ons webblad geplaas word.

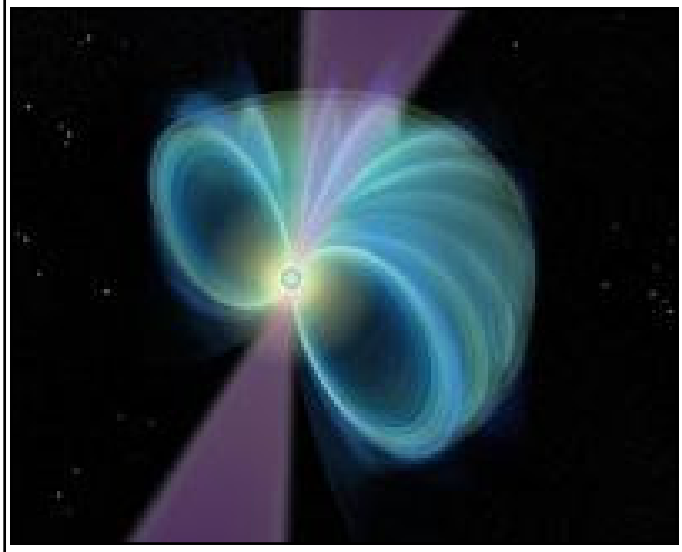
Comet Hartley 2

Below is one of the images from a video clip that was compiled from images taken by NASA's EPOXI mission spacecraft during its flyby of comet Hartley 2 on Nov. 4, 2010. During the encounter, the spacecraft and comet whisked past each other at a speed of 12.3 kilometers per second. The spacecraft came within about 700 kilometers of the comet's nucleus at the time of closest approach. The EPOXI mission's flyby of comet Hartley 2 was only the fifth time in history that a comet nucleus has been imaged.

http://www.jpl.nasa.gov/news/news.cfm?release=2010-375&cid=release_2010-375



XMM - Newton detects a weird new type of star



The XMM-Newton orbiting telescope has detected periodic X-ray emission or the pulsed heartbeat of a weird new type of star. Collecting the X-rays from a so-called rotating radio transient has confirmed the nature of the underlying celestial object and given astronomers a new insight into these exotic objects. The celestial object RRAT J1819-1458 was targeted. Astronomers observed the object for around 12 hours.

Previously, astronomers had only seen radio outbursts from this object. It erupts every three minutes or so with a brief burst of radio emission lasting just 3 milliseconds. Such behaviour defines the object as a **r**otating **ra**dio **t**ransient (RRAT). "It is now definite that RRATs are rotating neutron stars as we can see the 4.26-second rotation period of the RRAT in the X-ray data," said the leader in the research.

The image shows an artist's impression of a RRAT.

http://www.spacedaily.com/reports/
XMM_Newton_Detects_Pulsed_Heartbeat_Of_A_Weird_New_Type_Of_Star_999.html

Basics: distances to stars by parallax measurement - by Pierre Lourens

The distances to stars are of importance in many fields of astronomy. The distances determined by this method are the basis of other methods of determining the distances to stars. The parallax of a star is the angle p subtended by the radius R of Earth's orbit around the Sun, as shown in the figure. Let d be the unknown distance to the star. Because the angle p is very small (< 1 arcsecond), we have the following (≈ means "is approximately equal to"):

$$p \approx R/d$$

with p in radians and R and d in the same length units. Because it is an exceedingly good approximation, we take the liberty to write it as an equation:

$$p = R/d$$

so that

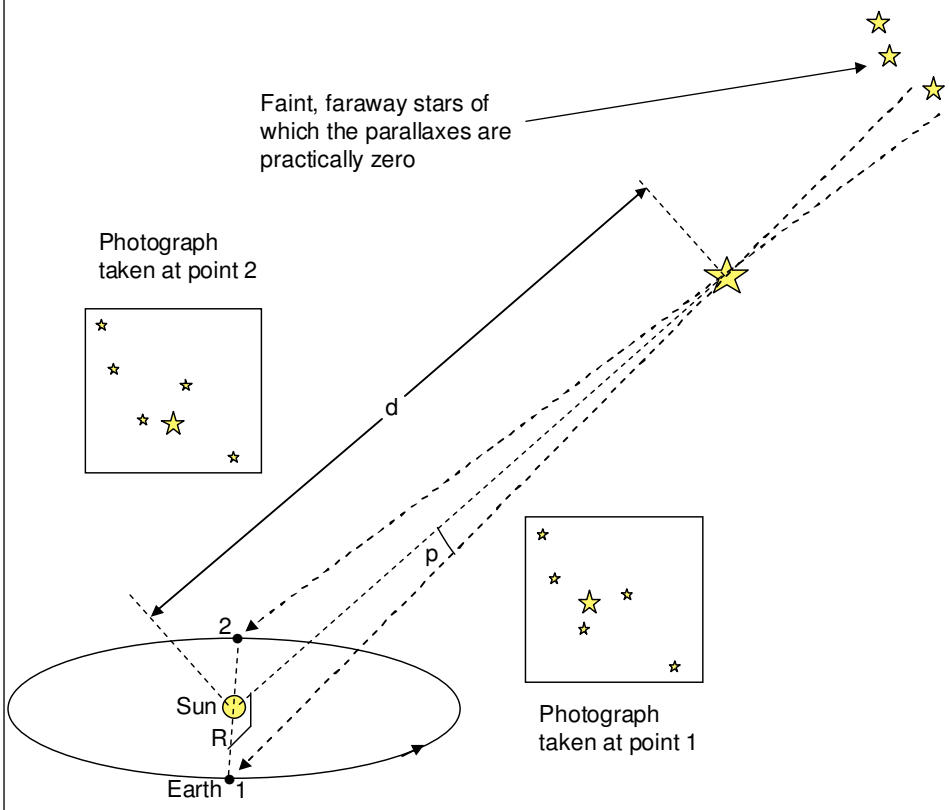
$$d = R/p$$

With d in light-years and p in arcseconds, this equation becomes

$$\mathbf{d = 3.262 / p}$$

Photographs are taken from Earth at positions 1 and 2 in Earth's orbit of the targeted star and some faint, faraway stars in the background. The photographs show that the targeted star has shifted relative to the background stars by a small angle. This small angle (= 2p) is measured on the photographs and the distance calculated with the last equation above.

This is simple in principle, but it is difficult to measure the extremely small angle 2p accurately in practice. This is because the image of a star on a photograph taken from Earth is not just a point, but is smeared out because of the effects of Earth's atmosphere on the starlight on its way to Earth. These effects are called "astronomical seeing". This limits the accuracy of the measurement of p to 0.002 arcseconds at the very best. The greater the distance of the star, the smaller the parallax and the greater the **percentage** error in the measurement of 2p for the star. To appreciate how small p is, hold a piece of paper edgewise at arm's length. The thickness of the paper subtends an angle of about 30 arcseconds. p is < 1 arcsecond in size. Earth-based astronomers have been able to measure fairly accurate parallaxes for only a few thousand of the nearest stars.



In 1989, the European Space Agency launched the satellite Hipparcos to measure stellar parallaxes from above Earth's atmosphere, and thus avoid the problem of astronomical seeing. After 4 years of observations and 3 years of data reduction, the data was published in 1997 in two catalogues. One contains data for 120000 stars with parallaxes accurate to 0.001 arcseconds. The other contains data for over 1 000000 stars with parallaxes as accurate as those obtained from Earth.

http://www.rssd.esa.int/index.php?project=HIPPARCOS

Rare 360º panorama of the southern sky

The Milky Way arches across this rare 360-degree panorama of the night sky above the Paranal platform, home of ESO's Very Large Telescope. The image was made from 37 individual frames with a total exposure time of about 30 minutes, taken in the early morning hours. The Moon is just rising and the zodiacal light shines above it, while the Milky Way stretches across the sky opposite the observatory.

The open telescope domes of the world's most advanced ground-based astronomical observatory are all visible in the image: the four smaller 1.8-metre Auxiliary Telescopes that can be used together in the interferometric mode, and the four giant 8.2-metre Unit Telescopes. To the right in the image and below the arc of the Milky Way, two of our galactic neighbours, the Small and Large Magellanic Clouds, can be seen.

For other interesting pictures, see www.eso.org/public/images/potw/

Sent in by Pat Kühn, one of our committee members.

KAROO STAR PARTY 2011

The Karoo National Star Party is now becoming a regular event! We are already planning it for 2011. The ASSA Pretoria Centre wants to hold its third Karoo National Star Party during the weekend of Friday 29 April to Monday 2 May 2011 about 20 km north of Britstown in the Karoo, right next to the N12 at the Kambro Padstal.

http://www.pretoria-astronomy.co.za/events.htm

Pretoria Centre committee

Chairman	Johan Smit	072 806 2939 [Mobile]	
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Curator of Instruments	Johan Smit	072 806 2939 [Mobile]	
Public Relations Officer	Fred Oosthuizen	072 373 2865 [Mobile]	
Assistant Treasurer	Percy Jacobs	082 498 4680 [Mobile]	
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